

## ABSTRACT

The nuclear reactor comprises a lower stopper sealingly fixed to a lower end of a tubular casing of the pencil that comprises a part which is internal to the casing successively comprising a first cylindrical section having a diameter which is  
5 substantially equal to the inner diameter of the tubular casing; a second cylindrical section whose diameter is smaller than the inner diameter of the tubular casing and  
a third cylindrical section whose inner diameter is smaller than the inner diameter of the tubular casing and greater than the diameter of the second cylindrical section  
such that 1-2 tenths of a millimetre radial play is created in the gas passable  
10 between the outer surface of the third section and the inner surface of the casing.